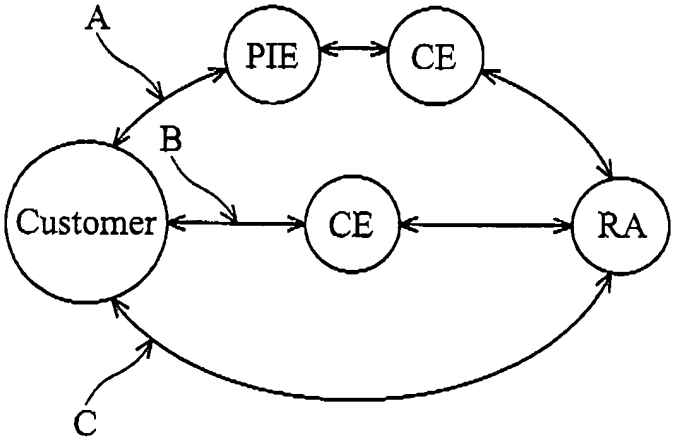

FIG. 1 (RELATED ART)

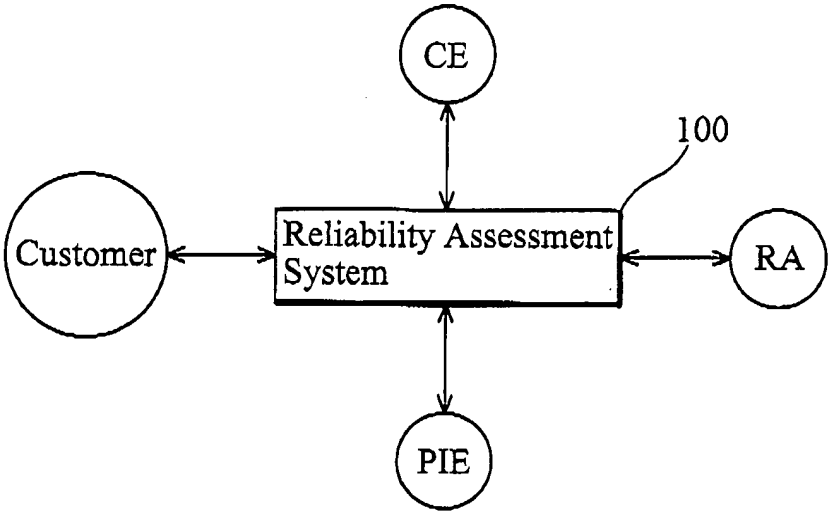

FIG. 2

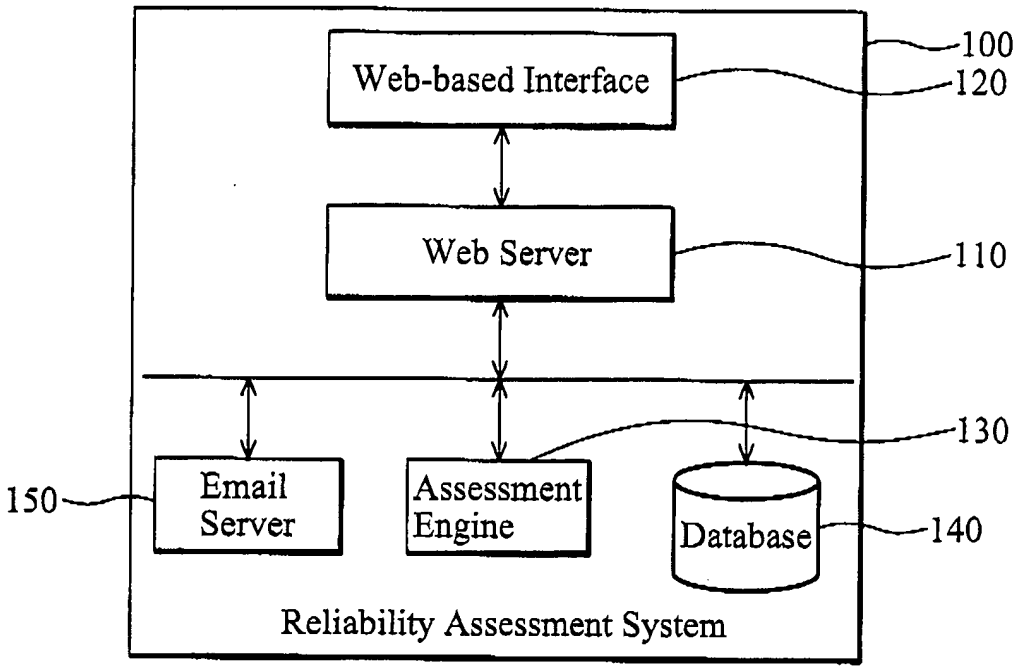
Web-based Interface
100
120
Web Server
110
130
150
Email Server
Assessment Engine
Database
140
Reliability Assessment System

FIG. 3

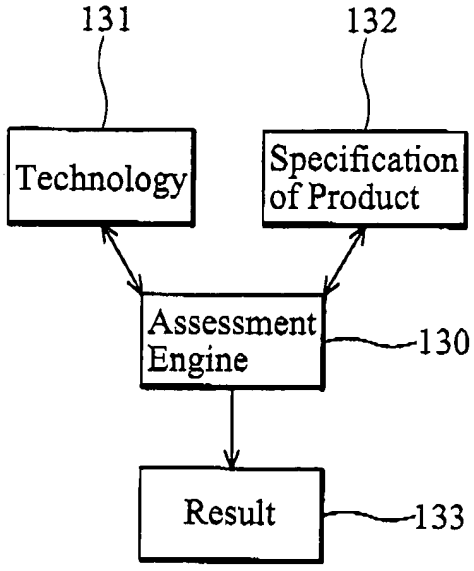
131
132
Technology
Specification of Product
Assessment Engine
130
Result
133

FIG. 4

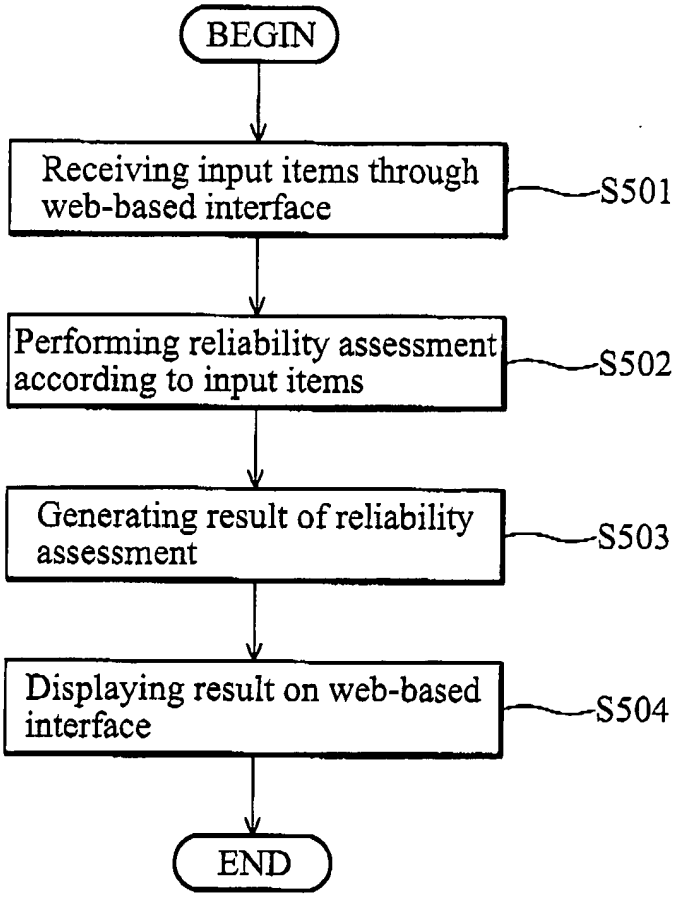
BEGIN
Receiving input items through web-based interface
S501
Performing reliability assessment according to input items
S502
Generating result of reliability assessment
S503
Displaying result on web-based interface
S504
END

FIG. 5

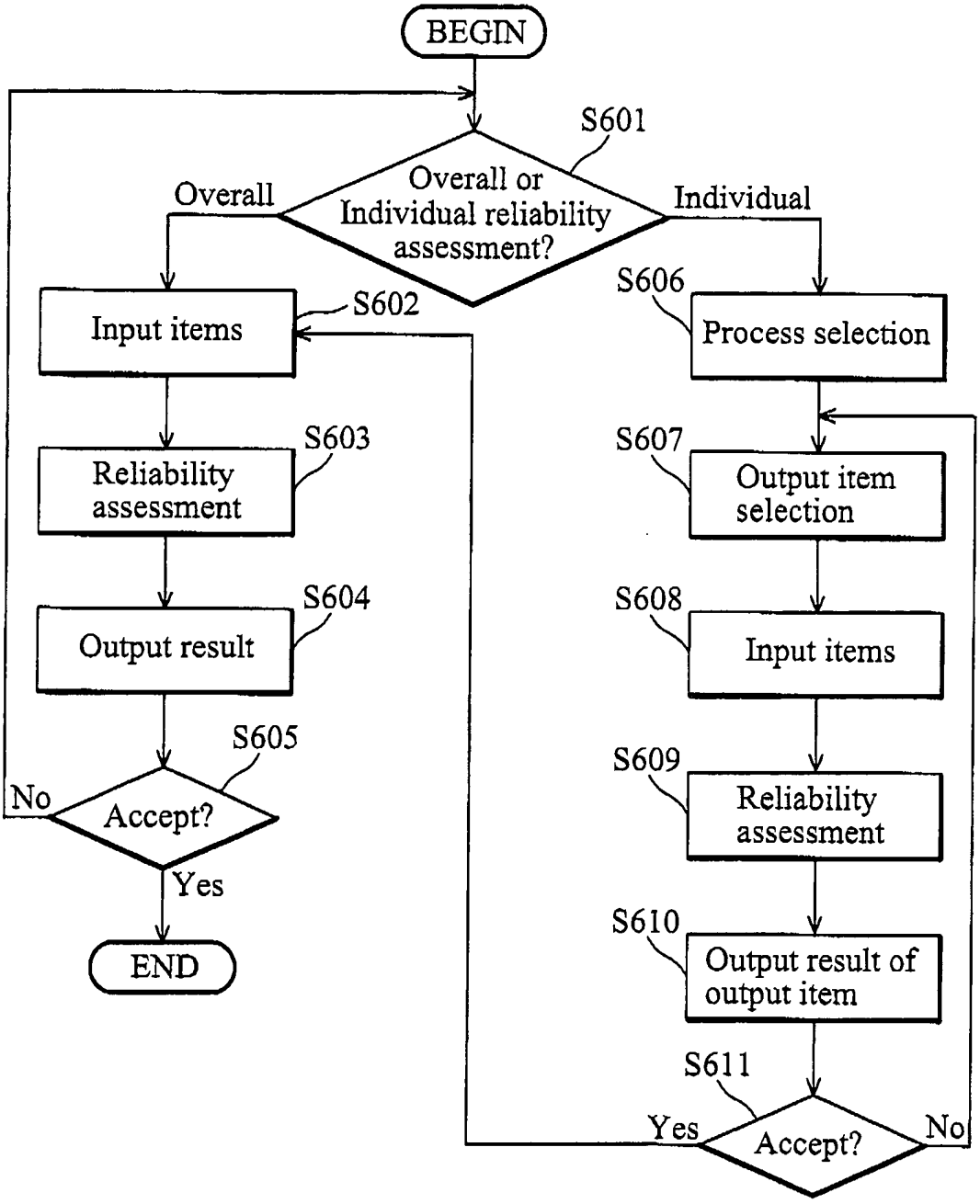
BEGIN
S601
Overall or Individual reliability assessment?
Overall
Individual
Input items
S602
Reliability assessment
S603
Output result
S604
S605
No
Accept?
Yes
END
S606
Process selection
S607
Output item selection
S608
Input items
S609
Reliability assessment
S610
Output result of output item
S611
Yes
Accept?
No

FIG. 6

Items	Input
*Generation	[v] 0.13um, [ ] 90nm
	[ ] CL013G (1.2V/3.3V) FSG, [ ] CL013LV (1.0V/3.3V) FSG, [ ] CL013G (1.2V/3.3V) LK, [v] CL013LV (1.0V/3.3V) LK
*Process	[1] Poly [8] Metal
*Vcc	core [1.0] V, I/O [3.3] V
*Tj max	[85] C
	tolerance [nnn] C
*Gate oxide area (in total product)	core NMOS [2E6] um^2, core PMOS [2E6] um^2 I/O NMOS [2E6] um^2, I/O PMOS [2E6] um^2
Transistor size	core NMOS: W/L=[10] / [0.13] um core PMOS: W/L=[10] / [0.13] um I/O NMOS: W/L=[10] / [0.35] um I/O PMOS: W/L=[10] / [0.3] um
Metal dimension	metal-1 : spacing/length = [0.18] / [ooo] um inter-metal (M2~M7): spacing/length = [0.21] / [ppp] um top metal (M8): spacing/length = [0.46] / [qqq] um
*Use TSMC EM Jmax design rule	[100%]
Product lifetime	[10] years
Product burn-in	[NO], If "YES", then Vcc = [ ]V with duration [ ] hrs
Product die size	X = [xxx] mm, Y= [yyy] mm (no including scribe line and seal ring)
Emb-SRAM size/area	[aaa] Mbits with area [bbb] mm^2
EFR expection	[500] DPM with duration [30] days
Excute	

700

FIG. 7

800

Customer:	MEI	User:	Tony_Lee	Sheet no. 00001	
	Items	Device	Dimension	Decision	Result
Process Reliability	GOI	core NMOS	2E6 um^2	pass	100 yrs
		core PMOS	2E6 um^2	pass	80 yrs
		I/O NMOS	2E6 um^2	pass	30 yrs
		I/O PMOS	2E6 um^2	pass	30 yrs
	HCI	core NMOS	10/0.13	pass	1000 yrs
		core PMOS	10/0.13	pass	1325 yrs
		I/O NMOS	10/0.35	fail	0.12 yrs
		I/O PMOS	10/0.3	pass	5 yrs
	NBTI	core PMOS	10/0.13	pass	6 yrs
		I/O PMOS	10/0.3	pass	7 yrs
	EM	metal line		pass	10 yrs
		contact/via hole		pass	10 yrs
		bump		pass	10 yrs
	LK IMD TDDB	IMD		pass	12 yrs
Process Reliability	EFR	30 days		---	500 DPM
	LTFA	0-1 year		---	200 FITs
		1-10 years		---	800 FITs

810

Fig. 8A Fig. 8B

FIG. 8A

Date:July 1,2003
Criterion
0.1% cum. fail, DC>=10 years
delta Idsh>=2.5%, 0.1% cum. fail, DC>=0.2 years
delta Idsat>=10%, 0.1% cum. fail, DC>=0.2 years
delta Idsat >=10%, 0.1% cum. fail, DC >=5 years
delta R <= 10%, DC > 10 years
0.1% cum. fail, DC >= 10 years

FIG. 8B

Items	Input	output
Generation	[v] 0.13um, [ ] 90nm	0.13um
Process	[v] 1.2V/3.3V FSG, [ ] 1.0V/3.3V FSG, [ ] 1.2V/3.3V LK, [ ] 1.0V/3.3V LK	1.2V/3.3V FSG
Choose output item	[ ] DC lifetime [ ] transistor size [ ] cum. fail [ ] Tj max [v] Vcc	Vcc
Vcc	core [ ] V, I/O [ ] V	core <= 1.2 V, I/O <= 3.5 V
	tolerance [0.1] V	
Tj max	[85] C	85 C
	tolerance [nnn] C	
Transistor size	core NMOS : W/L=[10] / [0.13] um core PMOS : W/L=[10] / [0.13] um I/O NMOS : W/L=[10] / [0.35] um I/O PMOS : W/L=[10] / [0.30] um	core NMOS : W/L=10/0.13 um core PMOS : W/L=10/0.13 um I/O NMOS : W/L=10/0.35 um I/O PMOS : W/L=10/0.30 um
Fail criterion	[v] Idsat with [10] % degradation (Vs=Vb=GND, Vd=Vg=Vcc) [ ] Idlin with [ ] % degradation (Vs=Vb=GND, Vd=0.1V, Vg=Vcc) [ ] gm with [ ] % degradation (Vs=Vb=GND, Vd=0.1V, sweep Vg) [ ] Vt with [ ] % degradation (Vs=Vb=GND, Vd=0.1V, sweep Vg)	delta Idsat >= 10%
cum fail (%)	[0.1] %	0.1%
DC lifetime	[0.2] years	0.2 years
DC to AC factor	[50] or [ ] (please provide wave form excel file)	DC to AC factor = 50
Excute		

910

900

FIG. 9

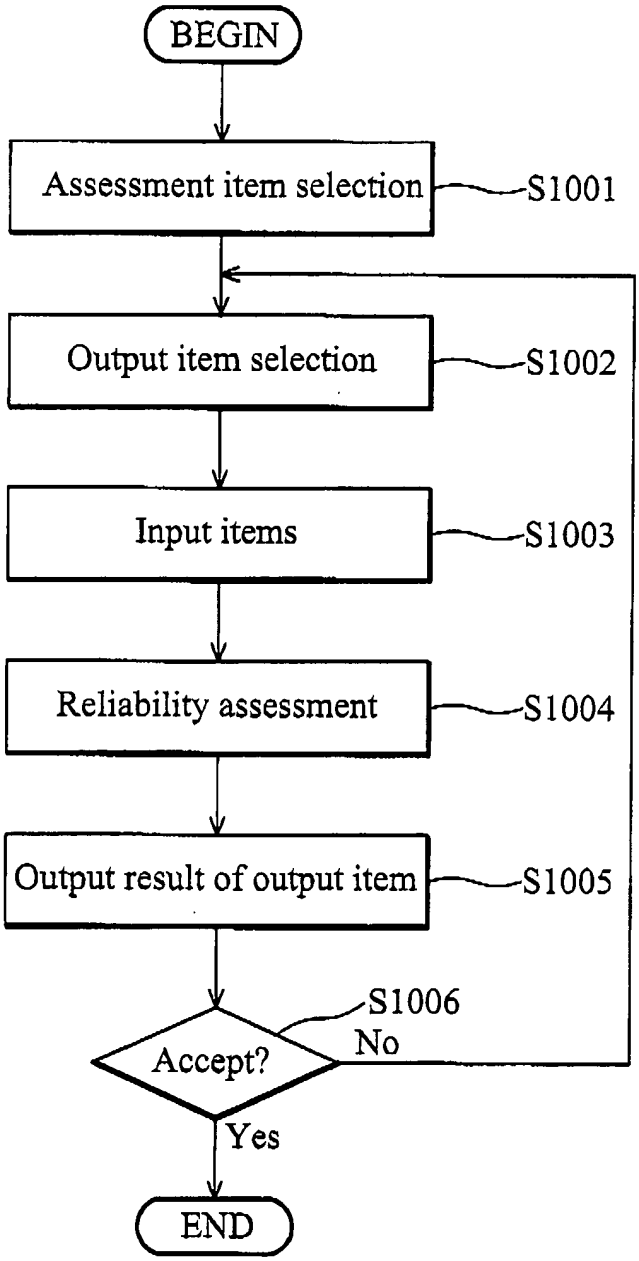
BEGIN
Assessment item selection
S1001
Output item selection
S1002
Input items
S1003
Reliability assessment
S1004
Output result of output item
S1005
S1006
Accept?
No
Yes
END

FIG. 10

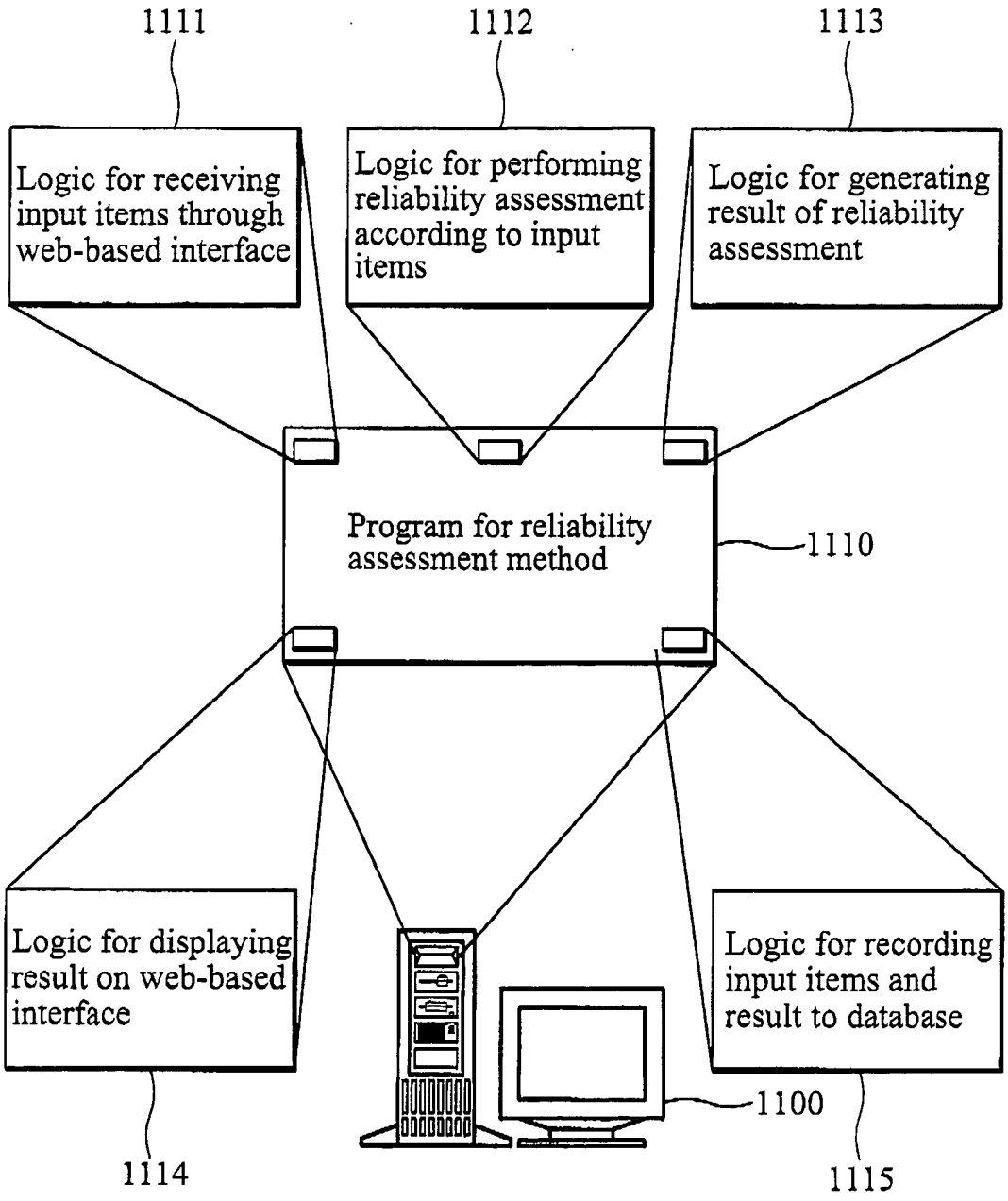
1111
1112
1113
Logic for receiving input items through web-based interface
Logic for performing reliability assessment according to input items
Logic for generating result of reliability assessment
Program for reliability assessment method
1110
Logic for displaying result on web-based interface
Logic for recording input items and result to database
1100
1114
1115

FIG. 11